

## A STUDY ON POST LIVELIHOOD SECURITY OF OCKHI CYCLONE IN FISHERMEN COMMUNITY – IN KANYAKUMARI DISTRICT

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### ABSTRACT

*The present study is to make an attempt in the analysis of the post livelihood status of the fishermen community due to Ockhi cyclone in Kanyakumari district. Livelihood is a competitive interaction between humans and resources in terms of human capital, natural capital, financial capital, physical capital, and social capital. The block will be selected based on the death of fishermen to each block of the Kanyakumari district. For the selection of villages, 2 villages were selected randomly from selected blocks mainly for the study. From each village 20 fishermen sample were selected randomly. Therefore, the sample size is 120. To measure the livelihood capitals following DFID and CARE international framework an analytical model is used. Human capital, natural capital and Social capital index increasing value after cyclone due to social bonding among fishermen groups and increasing network communication. Financial capital and Physical capital index show decreasing value after cyclone due to Ockhi cyclone there was high damage to assets and property owned by fishermen and it requires high amount for rehabilitation cost.*

**KEYWORDS:** Cyclone, Fishermen Community & Livelihood Security Index

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### INTRODUCTION

The present study is to make an attempt in the analysis of the post livelihood status of the fishermen community due to Ockhi cyclone in the Kanyakumari district. According to DFID (1999), livelihood means abilities, resources and assets of a human being which helps to live and also requires generating income from different activities. Livelihood is a competitive interaction between humans and the resources in terms of human capital, natural capital, financial capital, physical capital and social capital (Carney, 1998; Paul, 2013; Obayelu, 2015). The effect of climate change is the major reason for the natural calamities such as cyclonic storm, flood, sea-level rise, and Tsunami, etc., which worsen the area where it's severely affecting the day to day life of human beings. Fishermen community solely depends on the fishing activity therefore among another natural disaster, cyclone heavily affects the livelihood of coastal community of the country (Mooley, 1980; Haque, 1997). The cyclone together with powerful rainfall that assets hundreds of thousands of lives and make coastal community more unsafe than any other regions of the world (Murty & Neralla, 1992). It is therefore essential to investigate the effects of cyclone on the livelihoods of coastal communities and identify livelihood policies with regard to resource access.

### METHODOLOGY

According to Situation Report 1 by Indian Meteorological Department Report (December 3, 2017), the Kanyakumari district of Tamil Nadu and Kerala were the most affected region in the Ockhi cyclone. The casualty number to cyclone Ockhi, 141 fishermen are still missing and 24 fishermen were found died. Hence, the Kanyakumari district of Tamil Nadu will be purposively selected for the study.

**Table 1: Blockwise Fishermen Loss in Ockhi Cyclone**

Sl. No.	Block	Name of the Villages	Fishermen Loss (Nos.)
1.	Munchirai	Chinnathurai, Thoothoor, Eraviputhenthurai, Neerody, Poothurai	16
2.	Killiyoor	Enayamputhenthurai, Ramanthurai, Pudukadai	3
3.	Rajakkamangalam	Manakudy	2
4.	Kuruthencode	Colachel	2
5.	Agastheeswaram	Melakadaiyapattinam	1
	<b>Total</b>		<b>24</b>

**Source:** Assistant Director of Fishery Department – Kanyakumari district, 2017.

The block will be selected based on the death of fishermen to each block of the Kanyakumari district. From table 3 it was observed the block-wise number of fishermen who lose their life during the Ockhi cyclone of the Kanyakumari district. Munchirai block had the highest number of deaths with 16 numbers which followed by Killiyoor block with 3 numbers, Rajakkamangalam and Kuruthencode block 2 numbers respectively. Finally, Munchirai, Killiyoor, and Rajakkamangalam these three blocks were selected as the study area for the fishery sample. For the selection of villages, 2 villages were selected for the study. From each village 20, sample respondents were selected. Therefore, sample size is 120.

## TOOLS OF ANALYSIS

This is primarily used to evaluate the status of post-cyclone livelihood capital, define significant livelihood groups, adversity and crisis, and current livelihood policies in the study region for impacted farmers and fishermen families. To measure the livelihood capitals following the DFID and CARE international framework an analytical model is developed by identifying the relevant indicator of five livelihood capitals and indicators were defined (Carney, 1998; Carney et al 1999).

### Human Capital Index

The measures that are considered to calculate the human capital index are the level of household head education, the ability to work in an adverse situation with disaster-related preparation, the level of experience gained from learning, solving the group's issues, sharing ideas at group meetings, helping others to solve problems by inspiring others to community-friendly action and GO-NGO Below is the equation used to measure the index for human capital;

$$H = (\sum H_1/n + \sum H_2/n + \dots \dots \dots \sum H_{11}/n)/11$$

Where, H = Human capital index,  $H_1, H_2, \dots$  = Human capital indicators, n= number of sample respondents.

### Natural Capital Index

Access to open water sources, forest cover, pasture lands, status of soil fertility, pattern of soil fertility over the past 10 years, availability of water for agriculture purpose, soil salinity level, and frequency of tidal surge events are the indicators that are considered to calculate the natural capital index. Through applying the average of nine selected variables, the natural capital index is determined. The formula for calculating the index of natural capital is as follows:

$$N = (\sum N_1/n + \sum N_2/n + \dots \dots \dots \sum N_{11}/n)/9$$

where, N = Natural capital index,  $N_1, N_2, \dots$  = Indicators of natural capital, n= number of total sample respondents.

### **Financial Capital Index**

Indicators used to calculate the financial status include deposits and monetary values of each household's liquid assets, including cash reserves, savings in banks, cooperatives and associations, remittances and pensions, and liquid assets from cattle, poultry, jewelry, furniture, food and cash crops, trees and other assets that can provide liquidity. Upon translating all types of such wealth into monetary values for each family, financial capital index is divided between the study villages by the aggregate highest available financial deposit and monetary value.

$$F = A/A_h$$

Where, F= Financial Capital Index; A = Availability of bank deposit by each households;  $A_h$  = Maximum value of bank deposit in the sample respondents

### **Physical Capital Index**

The indicators that are used to measure the physical Capital such as road-to-market, road connectivity, access to cyclone shelters, access to agricultural and fishing accessories and transportation.

$$P = (\sum P_1/n + \sum P_2/n + \dots + \sum P_9/n)/9$$

Where, P= Physical Capital Index;  $P_1, P_2, \dots$  = indicators of physical capital; n = number of total sample respondents.

### **Social Capital Index**

In order to measure the social capital index values, three broad categories such as access to mass communication and individual interaction, engagement and link, and group membership are considered.

$$S = (\sum S_1/n + \sum S_2/n + \dots + \sum S_3/n)/3$$

Where, S= Social Capital Index;  $S_1, S_2, \dots$  = indicators of social capital; n = number of total sample respondents.

## **RESULTS AND DISCUSSIONS**

The present study finds the overall livelihood status of the fishermen community affected by Ockhi cyclone in the Kanyakumari district. For better understanding, comparison of livelihood status before the cyclone and after the cyclone of the fishermen community which helps to clearly understand the effect of the cyclone.

From table 2, the human capital index was 0.36 and 0.49 out of 1 before the cyclone and after cyclone respectively. The result indicated the human capital after the cyclone is higher in the fishermen community when compared to before cyclone. It is due to before cyclone the fishermen have no awareness of the effect of cyclone, but after Ockhi cyclone the number of fishermen who lost their lives is high in the disaster which creates fear among the fishermen community. Therefore, Tamil Nadu government instructed the fishery department and Government officials to conduct proper training to educate the knowledge about the cyclone and its effects. It will help fishermen in gaining knowledge about cyclonic effects, upgrade the level of thinking, increase the households head directly in community activities and also the same time they gain experience from the training. Application of the analysis of variation (ANOVA) indicates that the selected villages significantly differ in terms of human capital.

**Table 2: Livelihood Status of Fishermen Community in the Surveyed Villages**

Sl. No.	Livelihood Capitals	Index		ANOVA
		Before Cyclone	After Cyclone	
1.	Human	0.36	0.49	F=22.15**
2.	Natural	0.54	0.65	F=19.56**
3.	Financial	0.72	0.55	F=16.31**
4.	Physical	0.87	0.49	F=35.23**
5.	Social	0.41	0.53	F=11.47**

Note: \*- Significance at 5 percent, \*\* - significance at 1 percent

Source: Field survey data, 2018.

Natural capital index shows 0.54 and 0.65 out of 1 in before the cyclone and after the cyclone in the surveyed villages respectively. This is due to the proximity to common natural resources such as sea, river, in open access to fishermen. Fishermen likewise enjoy more natural capital than fishermen in the inland city. Better access to such resources has drawn many migrants to settle in the area, although this is the most vulnerable location to cyclone, while at the same time fishing is at high risk. As the village of Shoreline is situated on the Bay of Bengal's seaside, fishermen have higher access to deep-sea fishing. Consequently, the index of natural capital shows relatively lower value.

Value of financial capital index is high before cyclone (0.72) than after cyclone (0.55) out of 1 in the study area. This is due to Ockhi cyclone cause high damage in their physical property. Fishermen's financial status was poor after cyclone due to the high rehabilitation cost beard by the fishermen to recover the property. Hence, it considered as lower financial status reveals the generally low economic condition of respondents.

The physical capital index value became high before the cyclone (0.87) compared to cyclone (0.49) out of 1 in the study area. Before cyclone shows, higher physical capital index value had higher access to deep-sea fishing and ownership of physical assets such as fishing and agricultural accessories than after cyclone. It requires huge amounts of investment for mechanized ships and networks. Before cyclone fishermen normally capture deep-sea fish. On the other hand, due to poor economic conditions, a large number of fishermen respondents, but generally unable to invest more money for ships and networks. Therefore, after cyclone, the physical capital index indicates less importance than before the cyclone.

The index value of social capital shows a better post-cyclone situation among fishermen community (0.41) than before the cyclone (0.53). Due to high social bonding, network communication and also enjoying more services from government and non-governmental organizations, the higher performance of social capital index values indicates better social coherence among fishermen after ockhi cyclone. Nevertheless, such an advantage offers benefits such as access to information and ties with GOs and NGOs to fishermen families. In addition, these facilities allow fishermen to plan for disasters, rescue, relief and recovery relatively better.

## CONCLUSIONS

The present study identifies the impact of livelihood among the fishermen after the Ockhi cyclone. After cyclone human capital was slightly increased by GO and NGOs training especially in awareness on cyclone impacts. Natural capital was also increasing due to higher access to deep-sea fishing by fishermen. Financial capital index value decrease due to Ockhi cyclone, there was high damage to assets and property owned by fishermen it requires high amount for rehabilitation cost. The physical capital index shows decreasing value after cyclone due to Ockhi cyclone the infrastructure facilities highly destroyed. Social capital index shows increasing value which denotes the increasing of social bonding among fishermen groups and increasing network communication.

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